

CLINICAL: DRY MOUTH

OTC MANAGEMENT OF DRY MOUTH

Studies indicate a number of effective remedies exist, including XyliMelts slowly dissolving oral adhering discs.

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The many remedies for dry mouth available over-the-counter often make dental recommendation of an effective management strategy difficult, and patients are often left to decide on their own which product to use from a fairly overwhelming selection of oral care products carried by their local grocery or pharmacy; products which may or may not provide acceptable results. And further complicating decision making, some products lack underlying scientific research or supporting product testing literature documenting their efficacy. The result is that a product having the most advertising or popularity may be recommended by a dental provider over a remedy that is evidence based.

This brief article provides an overview of the causes of dry mouth, summarizes how to evaluate the patient with dry mouth, including assessment of subjective complaints and objective measures, lists common dry mouth remedies, and reviews the scientific and supportive product testing literature related to the OTC management of dry mouth.

The protective role of saliva

Saliva has many protective properties. It buffers oral acidity produced

by plaque, aides in the strengthening of the teeth through deposition of calcium and phosphorus, protects the intra-oral tissue by moistening and lubricating the intraoral and lip mucosa, has a sensory impact on taste (although taste can occur in the absence of saliva) and is an important constituent in the oral clearance of food and the initial process of digestion¹.

Causes of Dry Mouth

Dry mouth may result from behavioral issues such as smoking, mouth breathing, and factors such as aging as well as medication, chemotherapy, dehydration, emotional stress, local surgery or radiation, disease, and blockage of the gland ducts from stones or neoplasm. Diseases that can cause dry mouth include Sjogren's syndrome, HIV/AIDS, Alzheimer's disease, diabetes, anemia, cystic fibrosis, connective tissue diseases such as rheumatoid arthritis and sarcoidosis, infectious diseases such as the mumps and tuberculosis, avitaminoses, and congenital diseases (e.g. congenital aplasia of a gland or duct).²

Evaluation of the patient with dry mouth

An evaluation of the patient reporting dry mouth is necessary before recommendation of OTC products to rule out serious systemic diseases that need prescribed medication. Assessment should consist of a medical and dental history that includes

the patient's subjective complaints and physical examination, with the latter consisting of a visual inspection of the major glands and intra-oral mucosa as well as palpation of the salivary glands³. In some cases, plain film radiology, sialography, CT, CBCT, or MRI imaging may be necessary to rule out pathology.^{4,5}

Physical Examination

Visual examination should reveal a face that is symmetric and absent enlargement in the preauricular or submandibular region. The major salivary glands can be palpated by internal and external manipulation. With bi-digital manipulation, the major salivary glands should be soft and free of nodules. And palpation should not be painful. Fluid expressed from the parotid and submandibular glands during palpation or external massage (termed 'milking') should be clear and not cloudy.

Physical examination should also include evaluation of the salivary flow volume. Salivary 'flow rate' is typically measured when the glands are in a resting state (unstimulated) and then when they are artificially stimulated⁶. Saliva from all of the glands, including the minor glands, is collected over a specified period of time in both phases. Instrumentation necessary for assessing flow rate/volume include a stopwatch, wax or flavorless gum base for stimulation with chewing, and a graduated test tube or small beaker plus a scale capable of measurement in tenths of

grams. To assess unstimulated flow, the patient should not have eaten or taken in liquid for 30 minutes before testing. Also, this test should not be administered after manipulation of the glands.

The patient deposits his/her saliva into a graduated test tube or into a beaker that is weighed prior to and after collection. The volume of unstimulated whole daytime saliva that is considered normal is 0.25 - 0.50 grams/min or the equivalent number of milliliters (one gram = 1 ml). For stimulated saliva, a small (.5 cm) oval of wax (or a tasteless chewing gum base) is chewed (roughly one chew stroke per second) by the patient for five minutes with the saliva not swallowed but spit into a test tube or beaker. As before, the collected saliva is weighed or measured by volume. For stimulated whole saliva, flow rates considered normal range from 1-3 ml (or grams)/min. However, as a general rule, 0.7 ml (or grams)/min is the lowest value considered as the 'cut-off' point for estimating if stimulated flow is 'normal' or abnormal. Visible dryness may not be observed until the stimulated level falls below 0.10 ml (or grams)/min.

Subjective complaints

A helpful clinical guide for determining oral dryness that has supporting science is an 11 item questionnaire developed to help define subjective dryness and xerostomia. Each question is scored by the patient based on a 1-5 ordinal scale (never = 1, hardly ever = 2, occasionally = 3, fairly often = 4, and often = 5). Based on their data analysis, the higher the total score, the more likely it is that a patient will have xerostomia. The questions, listed below, are easy for a patient to complete.⁷

1. My mouth feels dry
2. My lips feel dry.
3. I get up at night to drink.
4. My mouth feels dry when eating a meal.
5. I sip liquids to aid in swallowing foods.
6. I suck sweets or cough lollipops to



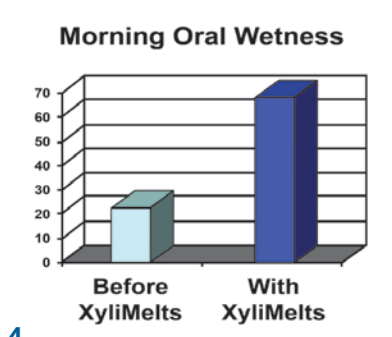
1 ▲ XyliMelts disc adhered more forward than usual.



2 ▲ Oral adhering discs. The tan side adheres to keratinized gingiva or teeth.



3 ▲ XyliMelts disc adhered in typical location.



4 ▲ Three-fold improvement: Burgess & Lee study of XyliMelts used while sleeping.

for reducing dry mouth occurring during the day and during sleep, it should be appreciated that science supporting their efficacy in reducing dry mouth is non-existent.

Research on over-the-counter products

A number of products are available over-the-counter for the management of dry mouth occurring during the day. These include various mouthwashes and oral rinses, sugar-free chewing gums, saliva substitute gels, dry mouth toothpastes, saliva substitute sprays, and lozenges. Oral adhering discs/patches/melts are available for both daytime dryness and dryness occurring during sleep. Erodible tablets, gels, and mouthwashes have been studied.^{12,13,14} Slowly dissolving oral adhering discs (OraCoat XyliMelts, OraHealth) used during sleep have been found via study to significantly improve perceived oral wetness and significantly decrease perceived morning discomfort.¹⁵ A randomized, double-masked, controlled crossover study involving a mucoadhesive disc for relief of dry mouth (OraMoist, Axiomedic, Zurich) also found a significant increase in salivary flow compared with baseline measures with daytime disc application.¹⁶

Considering strategies involving integrated systems that include toothpaste, gel, and mouthwash as well as oral reservoir devices, the authors of a relatively recent Cochrane systematic review report that these generalized strategies may also be beneficial in reducing perceived dry mouth but in the opinion of the authors there is insufficient evidence to allow a general recommendation for use in the management of dry mouth. They further indicate that even though “chewing gum is associated with increased saliva production in the majority of those with residual capacity, there is no evidence that gum is more or less effective than saliva substitutes” in altering dry mouth¹⁷.

Some of the above mouthwash and saliva substitute products have been formulated for daytime use and have not been assessed for uncomfortable

dry mouth occurring during sleep. The only dry mouth product that has been assessed for use during sleep is OraCoat XyliMelts (OraHealth).¹⁵

Effectiveness ratings for dry mouth products

Given research supporting use of a number of products aimed at improving the perception of dry mouth, albeit limited, the clinician is left with several choices to consider for over-the-counter treatments. The March 2016 issue of Clinicians Report provides helpful guidance.¹⁸ The report summarizes responses by 1,168 dentists whose patients suffer from dry mouth to a questionnaire on effectiveness of over-the-counter products for managing dry mouth.

In terms of general management, behavioral changes were recommended by 97% of dentists while prescription medicines were prescribed by only 28.8% of dentists. The most popular behavioral approaches included recommendations to increase water intake (86% of respondents) and increase use of fluoride (77% of respondents).

The commonly recommended over-the-counter remedies included:

- mouthwash/oral rinses such as Biotene dry mouth oral rinse,
- sugar-free chewing gum (any gum or Trident Xtra Care),
- saliva substitute gels (Biotene OralBalance Moisturizing Gel),
- dry mouth toothpastes (Biotene Dry Mouth Fluoride and Prevadent 5000 Dry Mouth Fluoride),
- saliva substitute sprays (Biotene Moisturizing Spray),
- lozenges (ACT Total Care Dry Mouth Lozenges or any type of lozenge), and
- oral adhering discs/patches/melts (OraCoat XyliMelts for Dry Mouth).

Most of the above products (the exceptions being sugar-free chewing gum and lozenges) were rated very or moderately effective in managing dry mouth by at least 40% of the respondents. Among all of the dry mouth remedies known to the 1,168 dentists, based on their assessment of patient experience, XyliMelts oral adhering discs were rated ‘very effec-

relieve dry mouth.

7. My throat feels dry.
8. The skin of my face feels dry.
9. My eyes feel dry.
10. I have difficulties swallowing certain foods.
11. The inside of my nose feels dry.

While the above questions help to define the level of perceived dryness, it is important to note that a patient’s perception of oral dryness may not correlate with the actual production of saliva⁸. And in terms of saliva collection, unstimulated whole saliva flow rate will vary between individuals, men and women, with age, and in relation to comorbid oral disease and oral anatomy.^{9,10}

This means that a patient’s complaint of oral dryness may not match up with objective measures. However, in general, when resting saliva falls to half of its ‘normal’ baseline, the result is typically a sensation of dryness¹¹. Dry mouth associated with sleep is normal, but if the dryness awakens a patient or causes oral

discomfort, an OTC remedy that can be used during sleep is often helpful.

The patient with dry mouth may also report sensitivity to spicy foods, difficulty speaking or eating coarse food, gingival or tongue sensitivity, tongue roughness, frequent oral infections including tooth decay, thick or sticky saliva, bad breath, and difficulty with appliance use. In cases of duct blockage, pain in the region of the gland may occur with the introduction of food.

Common dry mouth strategies

A number of unstudied self-help common sense strategies are thought to be useful in the management of dry mouth: lip coating with Vaseline or balms, discontinuation of caffeine and alcohol consumption, sucking on sugar free candies, humidifying the bedroom environment, adding water to food, avoiding salty foods, the frequent sipping of water, and sucking on ice chips. While some of these approaches may be helpful

tive' by more dentists (9.2% of the 152 who were familiar with it) than any other dry mouth remedy, including prescription drugs which came in second at 6% and dry mouth toothpastes which came in third at 3%. XyliMelts discs were also rated 'very effective or moderately effective' by more dentists (59.2%) than any other dry mouth remedy. Prescription drugs, saliva substitute gels, and mouthwashes and oral rinses were tied for second at 50%.

Conclusion

Published clinical studies show that a number of over-the-counter products are effective in managing dry mouth but effectiveness varies. More dentists rate XyliMelts slowly dissolving oral adhering discs as very effective for addressing dry mouth than any other product including prescription drugs. The published studies show that dry mouth during the day is effectively relieved by a variety of over-the-counter remedies and that XyliMelts adhering discs are also effective when used for dryness during sleep. ●

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